BEFORE THE
PUBLIC SERVICE COMMISSION
OF SOUTH CAROLINA

DOCKET NO. 2018-1-E

In the Matter of Annual Review of Base Rates for Fuel Costs for Duke Energy Progress, LLC	)))))	**REBUTTTAL TESTIMONY OF GLEN A. SNIDER FOR DUKE ENERGY PROGRESS, LLC**

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Glen A. Snider. My business address is 400 South Tryon Street, Charlotte, North Carolina 28202.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am currently employed by Duke Energy Corporation ("Duke Energy") as Director of Carolinas Resource Planning and Analytics.

Q. PLEASE DESCRIBE YOUR CURRENT RESPONSIBILITIES IN YOUR POSITION WITH DEC AND DEP.

A. I am responsible for the development of the Integrated Resource Plans ("IRPs") for both Duke Energy Carolinas ("DEC") and Duke Energy Progress ("DEP" or the "Company"), (collectively, the "Companies"). In addition to the production of the IRPs, I have responsibility for overseeing the analytic functions related to resource planning for the Carolinas region. Examples of such analytic functions include unit retirement analysis, developing the analytical support for certificate of public convenience and necessity filings for new generation, and production of analysis required to support the Companies' avoided cost calculations that are used in the Companies' avoided cost rate proceedings.

Q. HAVE YOU TESTIFIED BEFORE THIS COMMISSION BEFORE?

A. Yes. I have testified before the Public Service Commission on multiple occasions, including in fuel proceedings in Docket Nos. 2017-1-E, 2016-1-E, and 2016-3-E, and in the net energy metering methodology proceeding in Docket No. 2014-246-E.

Q. PLEASE BRIEFLY SUMMARIZE YOUR EDUCATIONAL AND PROFESSIONAL EXPERIENCE.

A. My educational background includes a Bachelor of Science in Mathematics and a Bachelor of Science in Economics from Illinois State University. With respect to professional experience, I have been in the utility industry for over 25 years. I started as an associate analyst with the Illinois Department of Energy and Natural Resources, responsible for assisting in the review of Illinois utilities' integrated resource plans. In 1992, I accepted a planning analyst position with Florida Power Corporation and for the past 17 years have held various management positions within the utility industry. These positions have included managing the Risk Analytics group for Progress Ventures and the Wholesale Transaction Structuring group for ArcLight Energy Marketing. Prior to my current role and immediately prior to the merger of Duke Energy and Progress Energy Corporation, I was Manager of Resource Planning for Progress Energy Carolinas.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY IN THIS PROCEEDING?

A. The purpose of my rebuttal testimony is to address issues raised by South Carolina Coastal Conservation League and Southern Alliance for Clean Energy witness, Devi Glick.

Q. DOES DEP ROUTINELY REVIEW THE COST AND BENEFIT COMPONENTS OF THE VALUE OF NET ENERGY METERING

("NEM") OF DISTRIBUTED ENERGY RESOURCES ("DER") CALCULATION?

A. Yes. As the amount of installed customer-owned generation increases, it is important that the Company continually monitors its impact to ensure safe and reliable grid operations. Through this monitoring and analysis of the impact of NEM DER on the Company's system, new costs and benefits are identified. Those identified costs and benefits of NEM DER are then incorporated into the the Value of NEM DER calculation in the next year's fuel case. The Company has identified the cost or benefit of several of the components of the Value of NEM DER as zero either because the Company cannot accurately quantify the cost or benefit of that component or because the Company believes the actual numerical value of that component is zero.

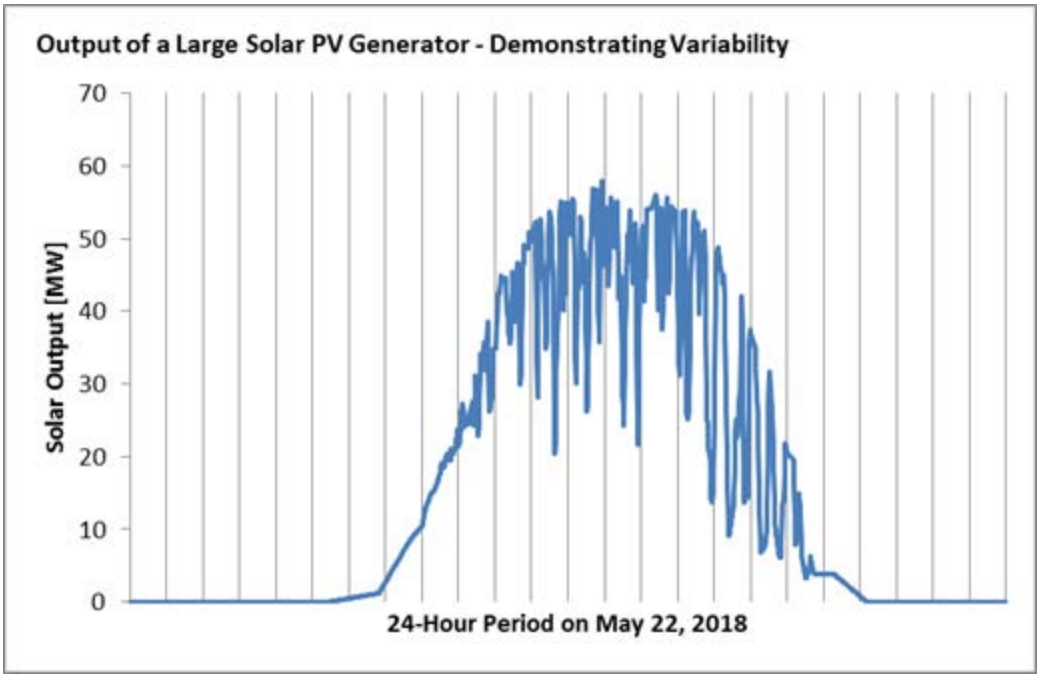
Q. DO YOU AGREE WITH WITNESS GLICK THAT NEM DISTRIBUTED ENERGY RESOURCES AVOID TRANSMISSION AND DISTRIBUTION INVESTMENTS BY DEP AND THEREFORE SHOULD BE ASSIGNED A VALUE GREATER THAN ZERO?

A. No, I do not. DEP has concluded that NEM DER does not avoid any transmission or distribution investments by the Company. The Commission has recognized in a recent SCE&G fuel proceeding (Docket No. 2017-2-E) that utilities "must design [their] transmission and distribution system so as to provide safe and reliable electric service, even when intermittent generation sources such as solar facilities and other small QFs are not producing power." Order No. 2017-246 at 24. Transmission and distribution infrastructure must

be able to meet peak demands and provide reliable service 365 days a year, 24 hours a day. Planners have no guarantee that a solar NEM will be producing coincident with the peak demand needs of a circuit. Furthermore, when developing plans, the Company cannot control the amount or location of solar output generated from NEM customers. These factors of coincidence, intermittency, nondispatchability and uncertainty in NEM DER location and quantity make it impossible for NEM DER to avoid investments related to transmission or distribution.

Q. PLEASE ELABORATE ON THE ISSUES OF COINCIDENCE AND INTERMITTANCY.

A. As previously stated, Distribution Planning is unable to rely on solar NEM to provide capacity during peak times due to their non-coincidence with demand peaks and their intermittent output. For example, circuits that experience peak load conditions in the winter have no NEM DER available at time of peak since winter peaking conditions often occur prior to sunrise. As such, NEM DER would not be useful to avoid costs associated with meeting that winter peak. In 2014, the annual peak demand requirement on 69% of the Company's distribution feeders occurred during the winter. In addition, as seen in the graph below for a large single site PV installation, the generator output over a 24-hour period can vary significantly throughout the day with cloud cover. This makes it difficult to reduce the capacity of distribution assets without a risk of overloading a circuit. Smaller net metered PV installations exhibit a similar intermittent load characteristic.



With regard to distribution costs or benefits, NEM DER may actually drive additional investments in the distribution system, as a result of increasing the size of service transformers to accommodate reverse flow, additional monitoring equipment, and updating voltage control schemes. This is particularly true in instances where deployment of NEM has been robust, such as a neighborhood where a large percentage of customers install NEM distributed energy resources or when NEM distributed energy resources interconnect to a circuit that already has larger, utility-scale solar installed.

Q. ON PAGES 11 THROUGH 13 OF WITNESS GLICK'S TESTIMONY, SHE DISCUSSES THE VALUE OF AVOIDED ENVIRONMENTAL COSTS IN THE CALCULATION OF NEM DISTRIBUTED ENERGY RESOURCES. HAS THE COMPANY QUANTIFIED VARIABLE OPERATIONAL COSTS ASSOCIATED WITH COAL ASH

DISPOSAL FOR THE PURPOSES OF CALCULATING NEM DISTRIBUTED ENERGY RESOURCES?

A. Yes, the variable operational costs associated with coal ash disposal are included within the avoided energy component of the calculation of NEM DER. With respect to the inclusion of coal ash handling costs in the value of solar calculation, it must first be recognized that only a small percentage of coal remains as ash in the coal combustion process. To the extent an NEM DER reduces the amount of coal burned, both the cost of the coal itself and the cost of handling the small amount of residual ash are included as an avoided energy benefit. Finally, NEM DER only reduces the amount of coal burned and its associated residual ash to the extent the coal plant was operating on the margin in the first place. Given the low price of natural gas, remaining coal units are operating at lower capacity factors in favor of natural gas generation. This further reduces the value of NEM DER as it pertains to avoided coal ash costs.

Q. DO YOU AGREE THAT CAPITAL COSTS ASSOCIATED WITH BUILDING NEW IMPOUNDMENTS SHOULD BE INCLUDED FOR PURPOSES OF CALCULATING NEM DISTRIBUTED ENERGY RESOURCES?

A. No. This is an incorrect assumption. NEM DER will have no impact on the number of impoundments DEP requires nor the capital cost of those impoundments. Simply put, the Company has committed to convert all remaining operating coal plants to dry ash handling by the end of this year.

As a result any slight reductions in dry ash produced due to NEM DER are appropriately captured as in the avoided energy component as avoided variable operating and maintenance cost as described earlier in my testimony, but would not reduce capital plans for impoundments.

Q. DO YOU AGREE THAT COSTS ASSOCIATED WITH THE RISK THAT AN IMPOUNDMENT WILL LEAK SHOULD BE INCLUDED FOR PURPOSES OF CALCULATING NEM DISTRIBUTED ENERGY RESOURCES?

A. No. As stated, on an ongoing basis all incremental ash production from operating coal facilities will be stored dry in a lined landfill. Commensurately, there is no "leak risk value" to associate with the dry ash landfill. Even if one was to inappropriately construe such a risk value, it is doubtful that a very small reduction in the amount of dry ash placed into the facility would impact the valuation.

Q. IS THE LINE LOSS STUDY USED TO SUPPORT DEP'S LINE LOSS CALCULATION FOR THE VALUE OF NEM DISTRIBUTED ENERGY RESOURCES ACCURATE?

A. Yes. Although the line loss study is several years old, the inputs used to calculate the loss factors used in the NEM DER calculation are updated annually to reflect current system conditions. In order to determine current system conditions, DEP measures power output at the Company's generating facilities against metered sales delivered to retail customers. The difference between the measured output at the generator and ultimate sales are

attributable to line losses. The line loss study referenced by Witness Glick is merely used to properly attribute the measured lines losses to the transmission system and the distribution system, as appropriate for ratemaking purposes. To the extent no major changes occur in the makeup of the Company's transmission or distribution system, then the line loss study remains valid. Accordingly, even though the current line loss study was completed several years ago, it continues to be representative of the Company's grid, and is therefore valid.

Q. DOES THE COMPANY HAVE PLANS TO UPDATE ITS LINE LOSS STUDY?

A. Yes, the Company is working toward updating its line loss study. Since the last line loss study, the Company has adopted new transmission and distribution modeling techniques that allow for evaluating the losses in more hours throughout the year, which will aid in refining the earlier-conducted line loss study. The review will also consider the influence of a solar profile on line losses to determine whether a net-metered solar-specific shape provides higher-than-average or lower-than-average line losses. The Company anticipates that this study could be complete for use in next year's fuel proceeding.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes. It does.